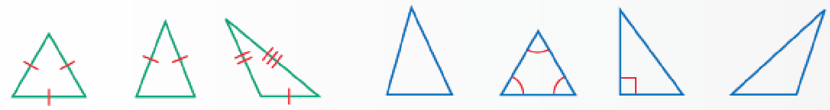
Geometry Date_____ Unit 4 Review

1. What is your name?

4.1 Triangles and Angles

Examples on pp. 194–197

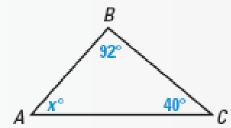
EXAMPLES You can classify triangles by their sides and by their angles.



Note that an equilateral triangle is also isosceles and acute.

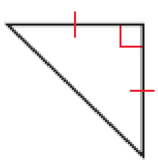
You can apply the Triangle Sum Theorem to find unknown angle measures in triangles.

$m\angle A + m\angle B + m\angle C = 180^\circ$	Triangle Sum Theorem
$x^\circ + 92^\circ + 40^\circ = 180^\circ$	Substitute.
$x + 132 = 180$	Simplify.
$x = 48$	Subtract 132 from each side.
$m\angle A = 48^\circ$	



Classify the triangle by its angles and by its sides.

2.



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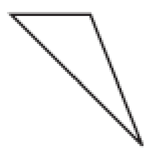

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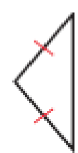

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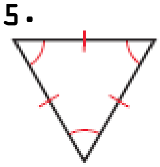

6. One acute angle of a right triangle measures 37°. Find the measure of the other acute angle.

7. In $\triangle MNP, m\measuredangle M = 24^\circ. m\measuredangle N = 5m\measuredangle P.$ Find $m\measuredangle N \,\&\, m\measuredangle P.$

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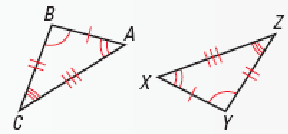
4.2 CONGRUENCE AND TRIANGLES

Examples on pp. 202–205

EXAMPLE When two figures are congruent, their corresponding sides and corresponding angles are congruent. In the diagram, $\triangle ABC \cong \triangle XYZ$.



Use the diagram from the example to answer the following questions.

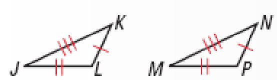
8. Identify the congruent corresponding parts of the triangles.

9. $m\measuredangle A = 48°$ & $m\measuredangle Z = 37°$, find $m\measuredangle Y$.

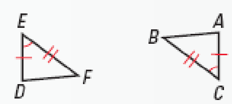
4.3 & 4.4 PROVING TRIANGLES ARE CONGRUENT: SSS, SAS, ASA, AND AAS

Examples on pp. 212–215, 220–222

EXAMPLES You can prove triangles are congruent using congruence postulates and theorems.



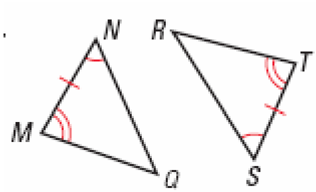
$\overline{JK} \cong \overline{MN}$, $\overline{KL} \cong \overline{NP}$, $\overline{JL} \cong \overline{MP}$, so $\triangle JKL \cong \triangle MNP$ by the SSS Congruence Postulate.



$\overline{DE} \cong \overline{AC}$, $\angle E \cong \angle C$, and $\overline{EF} \cong \overline{CB}$, so $\triangle DEF \cong \triangle ACB$ by the SAS Congruence Postulate.

Decide whether it is possible to prove that the triangles are congruent. If it is possible, tell which postulate or theorem you would use. Explain your reasoning.

10.



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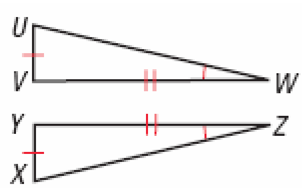

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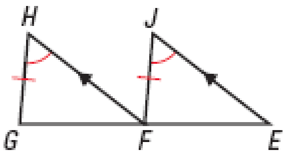
12.



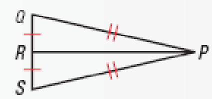
4.5 USING CONGRUENT TRIANGLES

Examples on pp. 229–231

EXAMPLE You can use congruent triangles to write proofs.

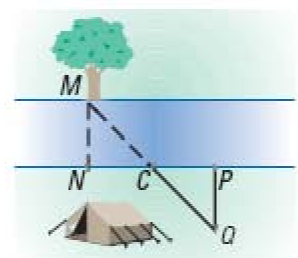
GIVEN ▶ $\overline{PQ} \cong \overline{PS}$, $\overline{RQ} \cong \overline{RS}$

PROVE ▶ $\overline{PR} \perp \overline{QS}$



Plan for Proof Use the SSS Congruence Postulate to show that $\triangle PRQ \cong \triangle PRS$. Because corresponding parts of congruent triangles are congruent, you can conclude that $\angle PRQ \cong \angle PRS$. These angles form a linear pair, so $\overline{PR} \perp \overline{QS}$.

You want to determine the width of river beside a camp. You place stakes so that $\overline{MN} \perp \overline{NP}, \overline{PQ} \perp \overline{NP}$, and C is the midpoint of $\overline{NP}$.



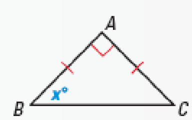
13. Are $\triangle MCN$ & $\triangle QCP$ congruent? If so, state the postulate or theorem that can be used to prove they are congruent.

14. Which segment can you measure to find the width of the river (without getting wet!)?

4.6 ISOSCELES, EQUILATERAL, AND RIGHT TRIANGLES

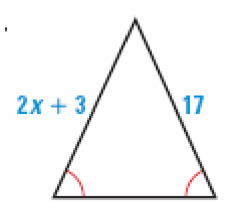
Examples on pp. 236–238

EXAMPLE To find the value of x, notice that $\triangle ABC$ is an isosceles right triangle. By the Base Angles Theorem, $\angle B \cong \angle C$. Because $\angle B$ and $\angle C$ are complementary, their sum is 90°. The measure of each must be 45°. So $x = 45°$.



Find the value of x.

15.



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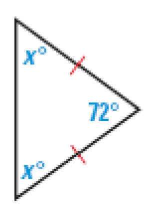

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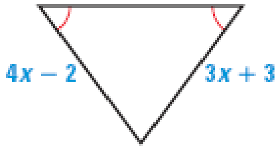
17.



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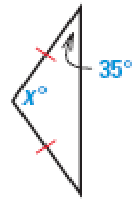


4.7 TRIANGLES AND COORDINATE PROOF

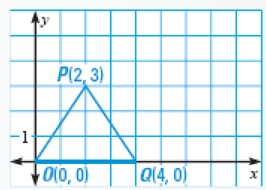
Examples on pp. 243–246

EXAMPLE You can use a coordinate proof to prove that $\triangle OPQ$ is isosceles. Use the Distance Formula to show that $\overline{OP} \cong \overline{QP}$.

$$OP = \sqrt{(2-0)^2 + (3-0)^2} = \sqrt{13}$$

$$QP = \sqrt{(2-4)^2 + (3-0)^2} = \sqrt{13}$$

Because $\overline{OP} \cong \overline{QP}$, $\triangle OPQ$ is isosceles.



19. Write a coordinate proof.
Prove: $\triangle OAC \cong \triangle BCA$